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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/072,906
Filing Date: February 12, 2002
Appellant(s): LYLYKANGAS ET AL.

MAILED
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GROUP 1700

Thomas W. Perkins
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 5, 2006 appealing from the Office action mailed March 1, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The Appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. However, the first, second and third grounds of rejection have been rewritten to reflect the content of the body of the rejections as made by the Examiner, and to further reflect the content of the arguments as presented by Appellants:

The first ground of rejection to be reviewed on appeal is rewritten as,

Whether claims 27 and 30-31 are unpatentable under 35 U.S.C. 103(a) over Usui (US 5,620,666) in view of Kono et al. (US 5,403,558).

The second ground of rejection to be reviewed on appeal is rewritten as,

Whether claims 27 and 30-31 are unpatentable under 35 U.S.C. 103(a) over Matsumoto (US 6,288,008) in view of Kono et al. (US 5,403,558).

The third ground of rejection to be reviewed on appeal is rewritten as,

Whether claims 28 and 29 are unpatentable under 35 U.S.C. 103(a) over Usui (US 5,620,666) OR Matsumoto (US 6,288,008) in view of Kono et al. (US 5,403,558), as applied to claim 27 above, and further in view of Chapman et al. (US 4,331,631) and Cairns et al. (GB 1,546,097).

Under the first and second grounds of rejection, it is noted that the Chapman et al. reference was cited in the heading of the rejections in the final Office Action, but the reference was not commented on within the body of the rejections. Instead, the Chapman et al. reference was only commented on within the body of the third ground of rejection. Furthermore, it is noted that appellant, similarly, did not present any comments on the Chapman et al. reference within the arguments section for the first and second grounds of rejection. Thus, no new grounds of rejection are being made.

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner:

Whether claims 27-30 are unpatentable under 35 U.S.C. 112, second paragraph.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

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| | | |
|--------------|----------------|---------|
| US 6,288,008 | MATSUMOTO | 09-2001 |
| US 5,403,558 | KONO ET AL. | 04-1995 |
| US 4,331,631 | CHAPMAN ET AL. | 05-1982 |
| GB 1 546 097 | CAIRNS ET AL. | 05-1979 |

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 27 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Usui (US 5,620,666) in view of Kono et al. (US 5,403,558).

Usui discloses a method of manufacturing a metal reactor cell that has overlapping corrugated sheets and a housing, the method comprising: preoxidizing the overlapping corrugated sheets and joining the preoxidized sheets simultaneously to each other and to at least a part of the housing by laser welding, electric welding, brazing, etc. (see, for example, column 7, lines 36-42, 55-61; column 8, lines 11-19; column 10, lines 38-43).

The method of Usui is substantially the same as that of the instant claims, but is silent as to whether the sheets may be joined by resistance welding.

However, Kono et al. shows the conventionality of joining the sheets and housing by resistance welding, laser welding, brazing etc. (see column 7, lines 13-15).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate type of welding, such as the resistance welding taught by Kono et al., for joining the sheets and the housing in the method of Usui, because the use of resistance welding is conventional in the art and no cause for patentability here.

2. Claims 27 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (US 6,288,008) in view of Kono et al. (US 5,403,558).

Matsumoto discloses a method of manufacturing a metal reactor cell that has overlapping corrugated sheets and a housing, the method comprising: preoxidizing the overlapping corrugated sheets and joining the preoxidized sheets simultaneously to each other and to at least a part of the housing by laser welding, electron beam welding, etc. (see, for example, column 2, lines 33-46; column 9, lines 35-37; column 14, lines 14-16).

The method of Matsumoto is substantially the same as that of the instant claims, but is silent as to whether the sheets may be joined by resistance welding.

However, Kono et al. shows the conventionality of joining the sheets and housing by resistance welding, laser welding, etc. (see column 7, lines 13-15).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate type of welding, such as the resistance welding taught by Kono et al., for joining the sheets and the housing in the method of Matsumoto, because the use of resistance welding is conventional in the art and no cause for patentability here.

3. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Usui (US 5,620,666) OR Matsumoto (US 6,288,008) in view of Kono et al. (US 5,403,558), as applied to claim 27 above, and further in view of Chapman et al. (US 4,331,631) and Cairns et

al. (GB 1,546,097).

The modified method of Usui or Matsumoto is substantially the same as that of the instant claims, but is silent as to the specific conditions of the preoxidizing step.

However, Chapman et al. teaches the conventionality of providing a preoxidizing step, including annealing metallic sheets at a variety of temperatures and times within the claimed range (see, for example, column 11, lines 15-19). Also, Cairns teaches preoxidizing metallic sheets for forming an alumina layer on the surface of the sheets, by heating the sheets in air at a specific temperature and time within the claimed range (page 3, line 128 to page 4, line 24).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to select the specific conditions for the preoxidizing step, as taught by Chapman et al. and Cairns et al., in the modified method of Usui or Matsumoto, so as to form a high surface area layer on the surface of the sheets, because the claimed conditions are conventional in the art and no cause for patentability here.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 27-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding claims 27 and 30, it is unclear as to where the limitation that the sheets and the at least

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part of the housing are joined together simultaneously is supported in the disclosure.

(10) Response to Argument

Comments regarding the rejection of claims 27 and 30-31 under 35 U.S.C. 103(a) as being unpatentable over Usui in view of Kono et al.

Appellant argues that Usui fails to disclose that the sheets are oxidized before they are joined to each other. In particular, Appellant notes that the Usui reference discloses a method for joining the sheets beginning at column 5, line 42 and does not discuss adding an alumina layer until column 8, lines 11-19.

The Examiner respectfully disagrees. The fact that Usui may have opted to order the particular discussion sections within the disclosure in a certain sequence does not mean that the process steps are also ordered in the same sequence. In particular, looking to the content of the discussion at column 7, line 62 to column 8, line 18, and, specifically, column 8, lines 10-18, it would be clear to one of ordinary skill in the art that Usui is describing the starting material, i.e., the bands **1** and **2**, employed for the fabrication of the metallic honeycomb body **H** or metal reactor cell, as discussed in the previous sections of the disclosure. The sheets or bands are oxidized to contain an alumina layer thereon, and therefore, the sheets or bands are oxidized prior to the step of joining.

In addition, Appellant (beginning at page 4, second paragraph, of the brief) argues that there would be no motivation to preoxidize the sheets in the method of Usui, because Usui does not distinguish brazing from the welding methods, and as is known to those of skill in the art, in order for brazing to work properly, the surfaces to be joined must be free of oxides.

The Examiner respectfully disagrees. Firstly, Usui states that the joining technique is not limited to brazing, and instead, may comprise various welding methods such as laser welding,

electron beam welding and electric welding (see column 7, lines 35-41 and 55-61). Although Usui may not indicate a preference for one type of joining technique over another type of joining technique (i.e., brazing versus welding), it cannot be denied the fact that the stated joining techniques are known in the art, and one having ordinary skill in the art would have been able to select an appropriate joining technique for forming the metal reactor cell on the basis of its suitability for the intended use as a matter of obvious design choice. Also, the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed." *In re Fulton*, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

Secondly, it is noted that Appellants have not provided any factual evidence in support of their assertion that brazing would not work for joining surfaces that contain oxides.

Regarding claim 27, Appellant further argues that Usui does not disclose the claimed limitation of simultaneous welding. The Examiner respectfully disagrees. Please note that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant case, Usui discloses that the step of joining the sheets to each other and to at least part of the housing may be conducted simultaneously (see column 10, lines 38-49). Although this portion of the discussion pertains to the joining technique of brazing, Usui (see column 10, lines 49-56) further discloses that,

"With respect to the metallic substrate MS according to the third embodiment of the present invention, various modifications are feasible.

For example, one of various fixing method can obviously be applied in place of

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the brazing method applied to the first member MS1 and the third member MS3. Further, the fixing can be conducted at desired points of contact."

Usui further discloses that other suitable fixing methods include laser welding, electron beam welding and electric welding (column 7, lines 36-42 and 55-61). The reference of Kono et al. was then relied upon to evidence the conventionality of using resistance welding as a fixing method (see column 7, lines 13-15).

It would have been obvious for one having ordinary skill in the art at the time the invention was made to select resistance welding for simultaneously joining the sheets to one another and the housing in the method of Usui, because the use of resistance welding is conventional in the art and no cause for patentability here. Furthermore, as is known in the art, resistance welding is defined as a joining technique where coalescence is produced by the heat obtained from the resistance of the work piece to an electric current in a circuit of which the work piece is a part, and by the application of pressure. Because the electric current will be carried by both the metal sheets and the metal casing of the metal reactor cell, in the form of a continuous circuit, any welding between the contacting metal parts will inherently occur simultaneously in the modified method of Usui.

Comments regarding the rejection of claims 27 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto in view of Kono et al.

Appellant (beginning at the page paragraph on page 5 of the brief) argues that Matsumoto fails to disclose that the sheets are oxidized prior to the sheets being joined. Appellant argues that although Matsumoto may disclose an oxidizing step at column 14, lines 14-18, such oxidation is carried out after the joining step, as indicated in column 13, lines 17-19.

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The Examiner respectfully disagrees. In particular, it is noted that Appellant's column-line reference at column 13, lines 17-19, refers to the prior art or "conventional process" for forming the metal reactor cell. The "conventional process" has several disadvantages, as indicated at column 13, lines 10-25. The invention of Matsumoto, however, overcomes these disadvantages because,

"... in the present invention, any plate, whether it is a flat plate or corrugated plate, can be first heat-treated and surface treated in their band state, then they are formed into a core unit by rolling cylindrically, and thereafter an indent is formed on the core unit. Then a bonding material is inserted in the indent and caused to become molten to obtain one solid unit." (see column 13, lines 26-44; emphasis added),

Thus, Matsumoto specifically discloses that the surface treatment, or oxidizing step, is conducted prior to the sheets being joined together.

Regarding claim 27, Appellant further argues that Matsumoto fails to disclose the claimed simultaneous welding. The Examiner respectfully disagrees. Please note that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant case, Matsumoto discloses that the corrugated sheets and the housing are "joined securely to each other by welding, deposition, buildup welding, brazing, flame coating or any other suitable joining means," (see column 2, lines 33-45). Kono et al. was then relied upon to teach that resistance welding is a conventionally known joining means (see column 7, lines 13-15). Collectively, Matsumoto and Kono et al. then teach that the overlapping corrugated sheets and the housing are simultaneously joined to each other and to at least part of the housing by

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resistance welding. This is evidenced by the various examples in Matsumoto. For instance, Example 1 (see column 3, lines 29-64; FIG. 1) discloses that when the bonding material of member 7 is caused to become a flowing molten material 9 by heating through welding, e.g., with a CO₂ laser or other known welding means (see column 4, lines 56-58), the metal sheets exposed at the notch 6 and the housing 4 are caused to join together simultaneously.

Comments regarding the rejection of claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Usui OR Matsumoto in view of Kono et al., as applied to claim 27 above, and further in view of Chapman et al. and Cairns et al.

Appellant does not present any additional arguments. Thus, the rejection is maintained for the same reasons set forth above.

Comments regarding the rejection of claims 27-30 under 35 U.S.C. 112, first paragraph.

Appellant argues that the limitation of “simultaneous welding” is supported at page 6, last paragraph, of the specification. The Examiner respectfully disagrees. Said paragraph, as amended in the response filed November 29, 2005, is repeated below, with emphasis added:

“According to an object of the invention the reaction cell is connected to the housing or to part of it by weld joints made by resistance welding. The resistance welding can preferably be made simultaneously when joining sheets together by resistance welding. The resistance welding can be made so that the reaction cell is installed inside the housing and the whole reaction cell and the whole housing are welded together. The resistance welding can also be made preferably so that a half of the reaction cell is installed inside a half of the housing and these are welded together. After that, the reaction cell and the housing can be connected by welding two connected splits together.”

The paragraph only provides support for simultaneous welding of the sheets to each other.

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However, the paragraph does not support the claimed limitation of simultaneous welding of the sheets to each other and at least part of the housing.

The teachings of this paragraph, in combination with Appellant's FIG. 1 and corresponding description (see specification page 8, lines 12-22), for instance, show that a reaction cell 1 is comprised of sheets 2 and 3 that are joined to each other at a plurality of joints 5 that may be formed by resistance welding. This suggests that the sheets are simultaneously welded in order to form the reaction cell, and the reaction cell, containing the previously simultaneously welded sheets, is then inserted in the housing (e.g., a housing 47 or 57 as in FIGs. 4 and 5) for further welding of the reaction cell to the housing. Such joining would be a two-step process, and not a simultaneous joining process as claimed by Appellants.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Jennifer A. Leung



Conferees:

Glenn A. Calderola



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